

What is claimed is:

1. A burst mode optical receiver comprising:  
a photodiode which converts an input optical signal into a current signal;  
a pre-amplifier which converts the current signal into a voltage signal;  
5 a single-to-differential converter which converts the single voltage signal  
output from the pre-amplifier into differential signals;  
a post amplifier which amplifies the differential signals and cancels an offset  
occurring during the amplification or offsets inherited from the differential signals;  
and  
10 a discriminator which discriminates data from the differential signals.

2. The burst mode optical receiver of claim 1, wherein the  
single-to-differential converter comprises a differential amplifier which receives a  
predetermined reference voltage as a first input and the single voltage signal as a  
15 second input to output symmetrical differential signals.

3. The burst mode optical receiver of claim 2, wherein the  
single-to-differential converter further comprises an auto threshold controller which  
detects maximum and minimum levels of the single voltage signal and provides a  
20 substantial middle value of the maximum and minimum levels as a first input to the  
differential amplifier.

4. The burst mode optical receiver of claim 3, wherein the auto threshold  
controller comprises:  
25 a top holder which detects the maximum level of the single voltage signal and  
holds the maximum level for a predetermined period of time;  
a bottom holder which detects the minimum level of the single voltage signal  
and holds the minimum level for a predetermined period of time; and  
a voltage divider which detects the substantial middle value of the maximum  
30 and the minimum levels.

5. The burst mode optical receiver of claim 1, wherein the post amplifier  
comprises a series of sets, each of the sets comprising:

a limiting amplifier which amplifies the differential signals and cancels offsets inherited from the differential signals or an offset occurring during the amplification according to a predetermined control signal; and

a cascaded set of a plurality of auto-offset cancellation portions which calculates a difference between outputs of the limiting amplifier, amplifies the difference, and provides the amplification result as the predetermined control signal to the limiting amplifier.

6. The burst mode optical receiver of claim 5, wherein the limiting amplifier is a differential amplifier that operates in a linear region.

7. The burst mode optical receiver of claim 6, wherein the auto-offset cancellation portions comprises:

a peak value sensor which detects the maximum or minimum levels from the outputs of the limiting amplifier; and

an error amplifier which amplifies the difference between the maximum or minimum levels.

8. The burst mode optical receiver of claim 5, wherein the auto-offset cancellation portions comprises:

a peak value sensor which detects the maximum or minimum levels from the outputs of the limiting amplifier; and

an error amplifier which amplifies the difference between the maximum or minimum levels.

9. The burst mode optical receiver of claim 1, wherein the post amplifier comprises cascaded sets, each of the sets comprising:

a first limiting amplifier which amplifies the differential signals output from the single-to-differential converter and cancels the offsets inherited from the differential signals or the offset occurring during the amplification according to the predetermined control signal;

an auto offset cancellation portion which calculates a difference between the outputs of the first limiting amplifier, amplifies the difference, and provides the

amplification result as the predetermined control signal to the first limiting amplifier;  
and

a second limiting amplifier which amplifies differential signals output from the first limiting amplifier.

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10. The burst mode optical receiver of claim 9, wherein the first or second limiting amplifier is a differential amplifier that operates in a linear region.

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11. The burst mode optical receiver of claim 10, wherein the auto-offset cancellation portion comprises:

a peak value sensor which detects the maximum and minimum levels from the outputs of the first limiting amplifier; and

an error amplifier which amplifies a difference between the maximum and minimum levels.

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12. The burst mode optical receiver of claim 9, wherein the auto-offset cancellation portion comprises:

a peak value sensor which detects the maximum and minimum levels from the outputs of the first limiting amplifier; and

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an error amplifier which amplifies a difference between the maximum and minimum levels.